

Mark COUPLINGS

PUROLATOR
FILTERS

PUROLATOR PRODUCTS, INC.

AEROSPACE DIVISION
NEWBURY PARK, CALIFORNIA
CODE IDENT. 05228

MS-I

TEST REPORT NO. 1137
FINAL SUMMARY REPORT
on
PUROLATOR PRODUCTS, INC., COOLING
SERVICE-QUICK DISCONNECT (OMC)
P/N's 9377-8 & 9377-16
NASA/MSFC P/N's 20M42006-9 & -11
NASA/MSFC SPECIFICATION NO. 20M42006
"REV. D", NASA/MSFC CONTRACT
NO. NAS8-11720

FACILITY FORM 502

N66 81240
(ACCESSION NUMBER)
5
(PAGES)
CPL 9557
(NASA CR OR TMX OR AD NUMBER)
(CATEGORY)
(CODE)
(THRU)

PREPARED BY J. Hunter DATE 12-7-65
J. Hunter, Technical Analyst
CHECKED BY Jorge Torres DATE 12-7-65
J. Torres, Chief Designer, Couplings
APPROVED BY Harvey B. Merade DATE 12-7-65
H. Merade, Contracts Administrator
APPROVED BY D. G. Goshaw DATE 12-7-65
D. Goshaw, Test Lab Supervisor
Approved By H. C. Mouwen Date 12-7-65
H. C. Mouwen, Chief Engineer

STATE OF CALIFORNIA
COUNTY OF VENTURA

IRENE H. KOHLER
NOTARY PUBLIC
STATE OF CALIFORNIA
COMMISSION EXPIRES JAN. 20, 1967

H. C. Mouwen being duly
sworn, deposes and says: That the information contained in this
report is the result of complete and carefully conducted tests and
is to the best of his knowledge true and correct in all respects.

SUBSCRIBED and sworn to before me

this 7th day of Dec. 19 65

Irene H. Kohler
Notary Public in and for the County of Ventura,
State of California

My Commission Expires

IRENE H. KOHLER

My Commission Expires Jan. 20, 1967

Date December 7, 1965

Contract No. NAS8-11720

Customer P. O. No. - - -

Test By PPI, CEL & Wyle Personnel

Test Engineer Richard Royalty

Under Surveillance of PPI Q.C.

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DATE December 7, 1965

SCOPE

This Report was prepared by PurOlator Products, Inc., under National Aeronautics and Space Administration Contract No. NAS8-11720 for the George C. Marshall Space Flight Center, National Aeronautics and Space Administration.

This report presents a brief summary of the overall program. The information and data presented herein demonstrate that PurOlator Products, Inc., Coupling Assemblies P/N's 9377-8 and -16 not only comply with, but exceed the requirements of NASA/MSFC Contract No. NAS8-11720 and its related Modifications.

INTRODUCTION

PurOlator Products, Inc., Cooling Service-Quick Disconnect, "ON Mark Coupling" Part Numbers 9377-8 and -16 were designed to comply with the requirements of NASA/MSFC Specification No. 20M42006 Rev. "D", as amended by Modification numbers 1 through 7 of NASA Contract No. NAS8-11720.

The Cooling Service-Quick Disconnect Couplings consist of the following assemblies:

<u>PPI (OMC)</u> <u>P/N</u>	<u>NASA/MSFC</u> <u>P/N</u>	<u>TYPE</u>	<u>DESCRIPTION</u>	<u>SIZE</u>
9377-8	20M42006-9	III	Assembly	1/2" nominal size
The above Coupling Assembly consists of the following Coupling Halves:				
1-9377-8	20M42006-1	III	Socket Half	1/2" nominal size
2-9377-8	20M42006-3	III	Adapter Half	1/2" nominal size
9377-16	20M42006-11	I	Assembly	1" nominal size
The above Coupling Assembly consists of the following Coupling Halves:				
1-9377-16	20M42006-5	I	Socket Half	1" nominal size
2-9377-16	20M42006-7	I	Adapter Half	1" nominal size

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PREFLIGHT CERTIFICATION TESTS

1. During the Preflight Certification Test Program on the 1/2 inch couplings (9377-8), no problems or failures of any kind were encountered.

The tests conducted and results were as follows:

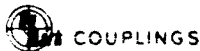
<u>TEST</u>	<u>S/N 001</u>	<u>S/N 002</u>
Pretest Inspection	Passed	Passed
Leakage Test - External	Passed	Passed
Leakage Test - Internal	Passed	Passed
Spillage Test	Passed	Passed
Connect-Disconnect Force Test	Passed	Passed
Pressure Drop Test	Passed	Passed
Vibration Test	Passed	Passed
Shock Test	Passed	Passed
Humidity Test	Passed	Passed
Salt Spray Test	Passed	Passed
Sand and Dust Test	Passed	Passed
Fungus Test	Passed	Passed
Post Test Inspection	Passed	Passed
Burst	Passed	Passed

2. During the Preflight Certification Test Program on the one (1) inch Coupling (9377-16), the NASA supplied mounting brackets broke during the initial calibration of the Recorder, Accelerometers, and instruments used for the Random Vibration Tests. During the actual Random Vibration Tests some leakage was recorded in the connected position, this was due to insufficient support for the Socket Half hose (reference PPI Unplanned Event Record dated March 12, 1965). NASA redesigned their brackets and supports and supplied PPI with two (2) sets of hardware and two (2) extra units; the Vibration, Shock and Post Functional Tests (per Modifications 5 and 7 of NASA Contract No. NAS8-11720) were repeated on the four (4) units without any further problems.

The tests conducted and results were as follows:

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<u>TEST</u>	<u>S/N</u> <u>001</u>	<u>S/N</u> <u>002</u>	<u>S/N</u> <u>13/19</u>	<u>S/N</u> <u>20/24</u>
Pretest Inspection	Passed	Passed	Test not performed	
Leakage Test - External	Passed	Passed	Test not performed	
Leakage Test - Internal	Passed	Passed	Test not performed	
Spillage Test	Passed	Passed	Test not performed	
Connect-Disconnect Force Test	Passed	Passed	Test not performed	
Pressure Drop Test	Passed	Passed	Test not performed	
Vibration Test	Passed	Passed	Passed	Passed
Shock Test	Passed	Passed	Passed	Passed
Humidity Test	Passed	Passed	Test not performed	
Salt Spray Test	Passed	Passed	Test not performed	
Sand and Dust Test	Passed	Passed	Test not performed	
Fungus Test	Passed	Passed	Test not performed	
Post Test Inspection	Passed	Passed	Passed	Passed
Burst	Passed	Passed	Test not performed	

All the results of the Preflight Certification Tests were recorded in PPI Test Report No. 1129, which was approved by NASA (J. R. Holmes - Propulsion & Vehicle Engineering Laboratory George C. Marshall Space Flight Center - R-P&VE-PE) on November 18, 1965

PRODUCTION MANUFACTURING

Units shipped to NASA:

<u>Part Number</u>	<u>Quantity Shipped</u>	<u>Date Shipped</u>
9377-16	18	March 26, 1965
9377-8	56	March 31, 1965

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RECOMMENDATIONS

Approval to change the material of the springs listed below, from 17-7 PH CRES to 302 CRES, Condition B.

<u>Unit P/N</u>	<u>Spring P/N</u>
1-9377-8	128-0-0-160
1-9377-8	128-0-0-111
2-9377-8	12-2-5012-8
1-9377-16	128-0-0-182
1-9377-16	128-0-0-233
2-9377-16	128-0-0-51

This change in materials would be a product improvement, and is recommended because of the tendency of 17-7 PH CRES to hydrogen-embrittlement during manufacturing, and when exposed to certain operating environments. This recommendation is made even though the 17-7 PH CRES springs have passed all qualification requirements. PPI is now in the process of requalifying the units with 302 CRES springs for IBM. Vibration, Shock, Burst and Post Functional Tests will be performed (reference PPI Test Report No. 1138).

CONCLUSIONS

PurOlator Products, Inc., Cooling Service-Quick Disconnect, "On Mark Coupling" Part Numbers 9377-8 and -16 conform to the design, functional and strength requirements of NASA/MSFC Specification No. 20M42006 Rev. "D", amended by Modifications 1 through 7 of Contract No. NAS8-11720.